Patent claims

1. Antibiotic polymer combination/antibiotics polymer combination, comprising (a) one or more antibiotic salts, which are sparingly soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, tetracycline antibiotics, glycopeptide antibiotics, quinolone antibiotics and chlorhexidine, and optionally (b) an antibiotic, which is readily soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, β-lactam antibiotics and tetracycline antibiotics, and optionally (c) one or more organic ancillary substances suspended in a homogenous polymer mixture to form a suspension wherein the homogeneous polymer mixture comprises one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride), post-chlorinated poly(vinyl chloride), poly(vinylidene chloride), poly(vinyl fluoride), poly(vinylidene fluoride) and copolymers comprising vinyl chloride and one or more nonionic monomers, and which comprises one or more hydrophilic polymers from the groups comprising polyethers, and wherein the suspension forms a composite.

2. Antibiotic polymer combination/antibiotics polymer combination, (a) one or more representatives of the antibiotic salts that are sparingly soluble in water, namely gentamicin dodecyl sulfate, gentamicin dodecylsulfonate, gentamicin laurate, gentamicin decyl sulfate, amikacin dodecyl sulfate, amikacin dodecylsulfonate, amikacin laurate, kanamycin dodecyl sulfate, kanamycin dodecylsulfonate, kanamycin laurate, kanamycin myristate, tobramycin dodecyl sulfate, tobramycin dodecylsulfonate, tobramycin laurate, tobramycin myristate,

vancomycin dodecyl sulfate, vancomycin laurate, vancomycin myristate, teicoplanin/vancomycin, clindamycin laurate, tetracycline dodecyl sulfate, tetracycline laurate, minocycline dodecyl sulfate, minocycline laurate, oxytetracycline dodecyl sulfate, oxytetracycline laurate, rolitetracycline laurate, rolitetracycline dodecyl sulfate, chlortetracycline dodecyl sulfate, chlortetracycline laurate, ciprofloxacin laurate, ciprofloxacin myristate, moxifloxacin myristate, chlorhexidine dodecyl sulfate, chlorhexidine laurate and chlorhexidine caprate, and optionally (b) an antibiotic, which is readily soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, β-lactam antibiotics and tetracycline antibiotics, and optionally (c) one or more organic ancillary substances suspended in a homogenous polymer mixture to form a suspension wherein the homogenous polymer mixture comprises one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride), post-chlorinated poly(vinyl chloride), poly(vinylidene chloride), poly(vinyl fluoride), poly(vinylidene fluoride) and copolymers comprising vinyl chloride and one or more nonionic monomers, and which comprises one or more hydrophilic polymers from the groups comprising polyethers, and wherein the suspension forms a composite.

3. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1 wherein the composite is formed from a free-flowing suspension, which comprises a homogeneous mixture of cyclohexanone and/or tetrahydrofuran and optionally plasticizers from the groups comprising the esters of phthalic acid, the esters of trimellitic acid, the esters of phosphoric acid, the esters of adipic acid, the esters of azelaic acid, the esters of sebacic acid, and one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride)

and copolymers comprising vinyl chloride and one or more nonionic monomers, and one or more hydrophilic polymers from the groups comprising polyethers, whereby, as a result of evaporation of the cyclohexanone and/or tetrahydrofuran, the following are suspended in this free-flowing suspension: one or more antibiotic salts, which are sparingly soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, tetracycline antibiotics, quinolone antibiotics and chlorhexidine, and optionally an antibiotic, which is readily soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, β-lactam antibiotics and tetracycline antibiotics, and optionally one or more organic ancillary substances.

4. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein the composite is formed from a melt that comprises one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride) and/or copolymers, which comprise vinyl chloride and one or more nonionic monomers, and one or more hydrophilic polymers from the groups comprising polyethers, and optionally plasticizers from the groups comprising the esters of phthalic acid, the esters of trimellitic acid, the esters of phosphoric acid, the esters of citric acid, the esters of tartaric acid, the esters of malic acid, the esters of fatty acids, the esters of adipic acid, the esters of azelaic acid, the esters of sebacic acid, whereby the following are suspended in this melt: one or more antibiotic salts, which are sparingly soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, tetracycline antibiotics, quinolone antibiotics and chlorhexidine, and optionally an antibiotic, which is readily soluble in water, from the groups comprising aminoglycoside

antibiotics, lincosamide antibiotics, and tetracycline antibiotics, and optionally one or more organic ancillary substances.

5. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein the quantity of hydrophilic polymer in the homogeneous polymer mixture amounts to between 0.1 and 60 percent by weight.

6. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein poly(ethylene glycol) with a number average molecular weight in the range from 120 $gmol^{-1}$ to 35,000 $gmol^{-1}$ is used as the polyether.

7. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein poly(propylene glycol) with a number average molecular weight in the range from 200 $gmol^{-1}$ to 35,000 $gmol^{-1}$ is used as the polyether.

8. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein poly(ethylene glycol) with a number average molecular weight in the range from 120 $gmol^{-1}$ to 600 $gmol^{-1}$ is used as the polyether.

9. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein vinyl chloride copolymers with number average molecular weights from 20,000 $gmol^{-1}$ to 2,000,000 $gmol^{-1}$ are used as the hydrophobic polymers, whereby these vinyl

chloride copolymers are prepared from vinyl chloride and the following comonomers: vinylidene chloride, vinyl fluoride, vinyl acetate, acrylonitrile, aliphatic esters of acrylic acid, aromatic esters of acrylic acid, aliphatic esters of methacrylic acid, aromatic esters of methacrylic acid, ethene, propene, butadiene, isoprene, 2-chlorobutadiene and isopropylene.

10. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein sulfonamides and/or antiphlogistic substances and/or anesthetic substances are used as the organic ancillary substances.

11. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 3, wherein the free-flowing suspension forms composites in the form of filaments as a result of spinning together with the evaporation of the cyclohexanone and/or tetrahydrofuran.

12. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim3, wherein the free-flowing suspension forms composites in the form of foils as a result of casting together with the evaporation of the cyclohexanone and/or tetrahydrofuran.

13. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 3, wherein the free-flowing suspension forms composites in the form of powders and granulated materials as a result of spraying together with the evaporation of the cyclohexanone and/or tetrahydrofuran.

14. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, wherein the composite is formed by compressing, extruding, and rolling to give shaped objects, coatings, and foils.

15. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, which comprises plastic tubes, plastic filaments, plastic foils, spherical plastic objects, roller-like plastic objects, or chain-like plastic objects coated with the composite.

16. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, which comprises catheters, tracheal cannulas, or tubes for intraperitoneal feeding coated with the composite.

17. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, which comprises implantable metal plates, metal nails, or metal screws coated with the composite.

18. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim1, which comprises medically usable shaped plastic objects, plastic foils, plastic filaments, metal plates, or metal pipes glued together or to a substrate with the composite.

19. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, which comprises antibiotic shaped objects comprising granulated plastic materials,

plastic powders, resorbable glass powders, non-resorbable glass powders, or quartz powders binded with the composite.

20. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, which comprises antibiotic laminates binded with the composite.

21. Method of using an antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 3, comprising applying the free-flowing suspension to the surface of plastics and/or metals via immersion, spraying, painting, brushing or rolling, and forming a composite in the form of a coating via the evaporation of the cyclohexanone.

22. Method of using an antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, comprising applying the composite in the form of a coating to medically usable plastic filaments, plastic foils, plastic tubes, plastic pouches, or plastic bottles.

23. Method of using an antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, comprising applying the composite in the form of a coating to spherical shaped objects, to roller-like shaped objects, or to chain-like shaped objects, whereby these comprise plastic and/or metal.

24. Method of using an antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, comprising applying the composite in the form of a coating to shaped objects, foils, or filaments comprising poly(methacrylic acid esters), poly(acrylic acid esters) poly(methacrylic acid esters-co-acrylic acid esters), poly(vinyl chloride), poly(vinylidene chloride), silicone, polystyrene, or polycarbonate.

25. Method of using an antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 1, comprising applying the composite in the form of a coating to the surface of metals and/or plastics via sintering.

26. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 2, wherein the composite is formed from a free-flowing suspension, which comprises a homogeneous mixture of cyclohexanone and/or tetrahydrofuran and optionally plasticizers from the groups comprising the esters of phthalic acid, the esters of trimellitic acid, the esters of phosphoric acid, the esters of adipic acid, the esters of azelaic acid, the esters of sebacic acid, and one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride) and copolymers comprising vinyl chloride and one or more nonionic monomers, and one or more hydrophilic polymers from the groups comprising polyethers, whereby, as a result of evaporation of the cyclohexanone and/or tetrahydrofuran, the following are suspended in this free-flowing suspension: one or more antibiotic salts, which are sparingly soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, tetracycline antibiotics, quinolone antibiotics and chlorhexidine, and optionally an antibiotic, which is readily soluble in

water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, β-lactam antibiotics and tetracycline antibiotics, and optionally one or more organic ancillary substances.

27. Antibiotic polymer combination/antibiotics polymer combination in accordance with Claim 2, wherein the composite is formed from a melt that comprises one or more hydrophobic, nonionic polymers from the groups comprising poly(vinyl chloride) and/or copolymers, which comprise vinyl chloride and one or more nonionic monomers, and one or more hydrophilic polymers from the groups comprising polyethers, and optionally plasticizers from the groups comprising the esters of phthalic acid, the esters of trimellitic acid, the esters of phosphoric acid, the esters of citric acid, the esters of tartaric acid, the esters of malic acid, the esters of fatty acids, the esters of adipic acid, the esters of azelaic acid, the esters of sebacic acid, whereby the following are suspended in this melt: one or more antibiotic salts, which are sparingly soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, tetracycline antibiotics, quinolone antibiotics and chlorhexidine, and optionally an antibiotic, which is readily soluble in water, from the groups comprising aminoglycoside antibiotics, lincosamide antibiotics, and tetracycline antibiotics, and optionally one or more organic ancillary substances.